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CALENDAR OF FRENCH SPACE EVENTS FOR 1971

National Center for Space Studies (CNES)

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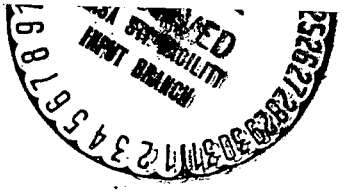

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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CALENDAR OF FRENCH SPACE EVENTS FOR 1971

January 15: Award to the French-German consortium CIFAS of the definitive contract for the development and production of two operating models of the SYMPHONIE telecommunications satellite.

January 16: CNES signs cooperation agreement on spatial geodesy with the Academy of Sciences of Poland.

February 3: Signing of the agreement between CNES (France) and INTA (Spain) (which was the subject of Decree No. 71,643 published August 2 and 3, 1971, in the official Journal of the French Republic), concerning a program for launching probe rockets from the Spanish El Arenosillo launch base. It deals with a tripartite (CNES, INTA, NASA) program of scientific ex-

periments in the ionosphere.

February 6: Use of the PEOLE satellite in experiments of the ISAGEX international geodesy programs; this was the first satellite equiped with laser reflectors and placed in a low angle orbit. The Dakar laser station transmitted 32 pulses, all of which were reflected by the satellite, followed by more signals on February 8 and 9. The launch of PEOLE on December 12, 1970, from the Guyana Space Center was the start of the ISAGEX program, proposed by France.

February 18-27: French-Soviet stratospheric balloon project, jointly organized by the National Center for Space Studies, the Center for Space Study of Radiation (France) and IZMIRAN of Moscow (USSR). During this project, stratospheric balloons were launched simultaneously from the Kerguelen Islands and the Obozierskiy region, carrying French and Soviet experiments studying X-ray radiation emitted during conjugate magnetic storms.

March 5: Launching of four American NIKE CAJUN probe rockets intended to check the compatibility of the rockets with the Guyana Space Center pad, as a preliminary stage in a CNES/NASA project for launching probe rockets.

March 15: Decree No. 71, 205 (published in the official Journal of the French Republic on March 20) announcing the arrangement between the CERS and its member states in regard to realization of a special TD satellite program, signed on October 9, 1968.

March 29-
April 2: International colloquium entitled "Space and Communications" organized in Paris by the Union of International Technical Associations, the National Federation of Electronic Industries and the French Society of Radio and Electronic Technicians, with the cooperation of the National Center for Space Studies. There were 408 participants (of whom 129 were from abroad, representing 25 countries), and 93 speakers (of whom 32 were from abroad).

April 2: Decree No. 71,268 (published April 10 in the Official Journal of the French Republic) announcing the agreement, signed November 25, 1970, in Paris, between the government of the French Republic and CECLES, relating to the construction and use of the equatorial base of CECLES at Kourou.

April 15: Placement of the D-2A Tournesol scientific satellite into orbit by the third Diamant B launcher, from the Guyana Space Center. The

mission of the satellite is to study the sun in the utraviolet range, together with the phenomena related to solar radiation at very high altitudes. By the end of 1971, 415 tapes had been recorded for scientific use.

April 19: Memorandum concerning agreement between CNES and NASA providing for the launch, with no exchange of funds, of 13 NIKE CAJUN and 4 CENTAURE rockets from the Guyana Space Center, in order to study the phenomenon of daily tides existing in the vicinity of the equator.

April 21: Return of the lunar samples originating from the Apollo 14 flights and the automated Luna 16 probe which had been offered to French researchers by NASA and the USSR Academy of Sciences.

April 7-27: Balloon release project for scientific flights studying aeronomy, astronomy, astrophysics and particle physics.

May 3-7: International colloquium organized by CNES in Nice, France, on "Education Satellites": 133 participants (59 from abroad, representing 30 countries), 28 speakers (12 from abroad).

May 8: Completion of qualification tests for the European site in Guyana with a stationary test of the whole Europa rocket.

May 17: Launch from the Guyana Space Center of an ERIDAN probe rocket intended to test the

ocean recovery system for probe rocket nose cones. The mission was a success.

May 27-June 6: On the occasion of the 29th International Aeronautics and Space Show at Le Bourget, CNES presented the Space Pavillion, visited by nearly 100,000 persons, showing the international cooperation, the national program, and the applied programs (geodesy, aerial navigation assistance, meterorology and telecommunications).

May 26-27: Series of launchings from El Arenosillo, Spain (within the framework of a cooperative program involving CNES, INTA and NASA) of four CENTAURE sodium emission probe rockets and four NIKE CAJUNs, in connection with aeronomy experiments. The nose cones containing the experiments were prepared by Spanish researchers.

May 28: Launch of the Soviet MARS III probe, carrying a French solar radioastronomy experiment STEREO I, intended to study the directionality of solar flares by means of two receivers: one sent up in the probe, the other installed at the Nançay radioastronomy station. The data transmitted will permit the recording of two solar activity traces.

June 8-12: French-German project for launching two French VERONIQUE probe rockets from the Guyana Space Center, to carry out geophysical experiments and a biology experiment prepared by German scientific organizations.

June 15-17: French participation in the meeting in Washington, in connection with the AEROSAT negotiations, between the European ministerial groups (chaired by the Spanish Air Minister) and the American authorities (FAA). An ad hoc international colloboration group was formed to pursue the negotiations and met June 17 in Washington, July 15-17 in Nordwijck, July 29-30 in Paris, August 3-5 in Madrid, and September 28-30 in Washington.

June 25: France offered ESRO the task of producing, within the framework of that organization, a meteorologic satellite for the French METEOSAT project.

June 20-July 8: Observation mission by airplane as part of the French program for remote detection of terrestrial resources, in the course of which 1042 photographs and radiometry recordings were obtained.

June 2-29: Series of balloon launchs from Aire-sur-l'Adour

(Landes) for French, Dutch, Belgian and Italian researchers, studying atmospheric diffusion at dusk, isotopic chemical composition of cosmic radiation, and biological experiments.

July 17-25: French-Italian series of balloon launchs from Sicily, on behalf of the University of Palermo: physics of the atmosphere.

August 16: Launching of the French experimental meteorological satellite EOLE from the NASA base on Wallops Island. The satellite locates and follows the movement of pressurized balloons reaching an altitude of 12,000 meters, collecting and transmitting to the ground the data on temperature, pressure and wind speed recorded by these balloons.

Satellite stabilization was achieved on August 19. Balloon releases followed from August 21 to December 9, 1971: 479 balloons were thus distributed in the southern hemisphere. The program was carried out in cooperation with NASA, responsible for the satellite launch, and Argentina, which authorized the installation and use on its territory of the three balloon release stations needed for the experiment.

August 31: Completion of the ISAGEX international series of geodesic observations begun January 5, 1971. Seventeen countries participated in this ex-

periment, of which CNES was the sponsor and project chief. Four American satellites (BEACON B and C, GEOS A and B) and three French satellites (DIADEME I and II, PEOLE) were used in this project.

September 1-October 13: Balloon launch series from the French base at Aire-sur-l'Adour (Landes) on behalf of French and Italian experimenters (biological, astronomy and aeronomy experiments) and ESRO (simulation of satellite-plane communications).

September 14: Launching of a DAUPHIN probe rocket from the Guyana Space Center: experiment by the Planetary and Stellar Physics Laboratory of the National Center for Scientific Research (CNRS) for measuring the vertical distribution of hydrogen atoms between 70 and 100 kilometers altitude.

September 19-22: Second portion of the CNES/NASA probe rocket series from the Guyana Space Center: launching of 13 NIKE CAJUNs and 3 CENTAUREs to study variations in temperature, winds and atmospheric density near the equator.

October 11-16: Meeting in Nice of French and Soviet scientists

and specialists on the use of cosmic space for peaceful purposes and on French-Soviet cooperation in the area of scientific research on space.

October 15: Signing of the contract between CNES and NASA concerning reciprocol loans of localization, telecommand and telemetry networks, as part of the reciprocal support agreement between CNES and NASA.

October 16-18: Series of probe rockets from the Guyana Space Center. Launch of an ERIDAN rocket carrying three untraviolet stellar photometry experiments conceived by the Space Astronomy Laboratory of the CNRS. Testing with a CENTAURE rocket of a nose cone recovery system worked out by ISRO (India).

October 22: Presentation in Paris by Mr. MATTHEWS for Europeans on the status of the Post-Apollo project. First meeting of the joint expert group in Washington November 30 to December 3.

October 26: Series of stratospheric balloon launchs from Aire-sur-l'Adour (Landes) as part of the French program for remote detection of terrestrial resources. During this 140 kilometer flight, 100 photos were obtained (black/white, infrared, color).

October 26-27: Study days on "Remote Detection of Natural Resources" hosted by CNES in Paris: 181 participants from 8 nations. Presentation of the current status of research on methods and means used in the study of terrestrial resources, for future utilization on satellites.

November 5: Failure of firing F 11 of the Europa II rocket launched from the Guyana Space Center.

November 23: Decision by NASA to carry a European experiment on board Apollo 16 examining the biological effects of cosmic radiation on various materials, one of the participants in which is the Space Biology Group (French organizations and laboratories).

November 23-25: International colloquium on "The space applications of sighting tubes", hosted by CNES in Paris: 190 participants (36 foreign, representing 11 countries), 26 speakers (15 foreign).

December 5: Failure of the D-2A Polaire Satellite launch, due to failure of the second stage of the launch rocket.

December 8: Signing of the contract between CNES and SAO (Smithsonian Astronautical Observatory) through which SAO places certain material (such as a Baker-Nunn camera) at the disposition of CNES as part of the ISAGEX program.

December 14-16: Launch of three Soviet MR 12 probe rockets from a ship anchored off the Guyana Space Center, and of a French VERONIQUE probe rocket from the GSC. These experiments, carried out in colloboration with the USSR Hydrometeorology Service, involved the comparison of different methods for ionospheric measurements.

December 15-16: The 54th session of CECLES/ELDO named General Aubiniere, Director General of CNES, to the post of Secretary General of CECLES/ELDO.

December 20: 44th council of CERS/ESRO: formal vote on reform of the ESRO convention which, in addition to an obligatory scientific program, will undertake programs of space applications with optional participation and which receives a role in coordinating domestic and international programs. France consequently withdraws it denunciation of the ESRO convention.

December 20: Signing of the arrangement between ESRO and certain member states with a view for production of the AEROSAT air traffic control satellite, corresponding to the French DIOSCURES program offered by France to ESRO.

December 27: Launch of a Soviet OREOL satellite, primarily intended for studying the ionic composition of the atmosphere. The scientific devices in the payload and the experimental program were prepared by the Center for Space Study of Radiation of Toulouse, France, as part of the joint French-Soviet ARCADE project, which also includes balloon releases and launchings of probe rockets, especially for the study of the auroral zones.